CONTENTS OF VOLUME 23

Number 1/2

BIOLOGICAL APPLICATIONS

M. A. HAYAT — 1 — Quantitation of immunogold labeling

S. DEY — 17 — Differential distribution of some elements in a camera type eye-lens as revealed by energy dispersive X-ray micro-analysis

M. TZAPHLIDOU, C. CUMMINGS and J. A. CHAPMAN — 25 — A study of staining for electron microscopy using collagen as a model system—IX. The effect of tannic acid fixation

F. VERNI, G. ROSATI, P. LENZI, L. BARSANTI, V. PASSARELLI and P. GUALTIERI — 37 — Morphological relationship between paraflagellar swelling and paraxial rod in *Euglena gracilis*

BIOLOGICAL TECHNIQUES

K. KANAYA, Y. MURANAKA, K. YONEHARA and K. ADACHI — 45 — Quantitative analysis of sputtering due to ion beam bombardment of solids and biological specimens in high resolution electron microscopy

EXTENDED ABSTRACTS OF THE ANNUAL MEETING OF THE SCANDINAVIAN SOCIETY FOR ELECTRON MICROSCOPY

E. BEHALOVA, P. HYTTEL, S. SMITH, T. GREVE and H. CALLESEN — 69 — The block against polyspermic fertilization in cattle

H. BIRN, E. I. CHRISTENSEN and S. NIELSEN — 71 — The dynamics of membrane transfer during endocytosis and membrane recycling in renal proximal tubule

W. M. BUSING, J. M. BROCK and M. T. OTTEN — 73 — New developments in electron microscopy for life science

L. M. CRUZ-ORIVE, L. M. KARLSSON, S. E. LARSEN and F. WAINSCHTEIN — 75 — Characterizing anisotropy: a new concept

SHIYING CUI and E. I. CHRISTENSEN — 77 — Serial section analysis of the apical part of renal proximal tubule cells

V. DANTZER and R. LEISER — 79 — Areola-gland subunits in the epitheliochorial types of placentae from horse and pig

A. C. ENDERS	81	Contributions of electron microscopy to our understanding of implantation and cell layer formation in primates
B.-A. FREDRIKSSON and M. LINDROTH	83	Freeze-drying and cryosputtering with tungsten or niobium for high resolution scanning electron microscopy
L. A. GINSEL and J. A. M. FRANSEN	85	Routing of brushborder and lysosomal enzymes in polarized epithelial cells (review)
G. H. HANSEN, L.-L. WETTERBERG, M. D. POULSEN, O. NORÉN and H. SJÖSTRÖM	87	Microvillus membrane enzymes along the crypt–villus axis
S. H. HANSEN	89	Early endocytic events
W. K. HENEEN, G. KARLSSON, K. BRISMAR and B. MATTSSON	91	The ultrastructure of lipid-rich oats
E. I. CHRISTENSEN	93	Membrane receptors involved in endocytosis in rat renal proximal tubule
M. JÄRVILEHTO and R. HARJULA	95	Actin filament array in an interstitial space is disorganized differently by capping agents $CaCl_2$ and KI
L. KAYSER	97	Quantitative dynamic fluorescence microscopy
R. F. KLINGE	99	The fine structure of the mandibular condyle
V. KOPEČNÝ	101	Specific features of bovine embryonic nucleologenesis: a review of fine-structure autoradiographic and immunoelectron microscope studies
N. M. LEE, C. WEIBULL, E. CARLEMAN and T. WELANDER	103	Microscopical studies of phosphorus accumulating bacteria in sludge from waste water treatment plants
J. LINDEN, R. POHJANVIRTA, T. RAHKO and J. TUOMISTO	105	The effect of TCDD on the pineal gland of Han/Wistar rats
S. MARTTILA, I. PORALI and A. MIKKONEN	107	Expression of different acid proteinases in germinating barley seed
A. B. MAUNSBACH and F. P. REINHOLT	109	Ultrastructural immunolocalization of Na,K-ATPase in high-pressure frozen kidney tubules
T. MOOS and Y. BALSLEV	111	Retrograde axonal transport of albumin–gold complex in rat motor neurons: a light and electron microscopic study
R. G. PARTON, K. SIMONS and C. G. DOTTI	113	Axonal and dendritic endocytic pathways in cultured neurons

K. PIHAKASKI-MAUNSBACH and T. PUHAKAINEN	115	Endocytosis in cold acclimated and non-acclimated protoplasts
E.-L. PUNNONEN, S. AUTIO and H. REUNANEN	117	Effect of tunicamycin on autophagy in cultured rat fibroblasts
K. ROBERG and J. M. ZDOLSEK	119	Visualization of iron in cultured macrophages with autometalography
S. SAARI, S. NIKANDER and T. RAHKO	121	A SEM study of the morphological features of the lower respiratory tract epithelium of the reindeer (*Rangifer tarandus tarandus* L.)
M. SHAMSUDDIN, B. LARSSON, H. GUSTAFSSON and H. RODRIGUEZ-MARTINEZ	123	Ultrastructure of *in vivo* and *in vitro* developed bovine embryos
F. VENNIGERHOLZ, B. WALLES and A. GEITMANN	125	Immunocytochemical localization of pectin in stylar tissues
A. J. VERKLEIJ	127	Immunogold labeling in cell biology
P. WALLÉN and O. SHUPLIAKOV	129	Confocal laser scanning microscopy as a tool to study the 3-D structure of identified neurons
V. ALFREDSSON	133	HREM study of zeolite Na-Y
S. J. ANDERSEN, O. JENSRUD, I. JOHANSEN, H. J. ROVEN and R. HØIER	135	Si-particles in an AlNiSiMn alloy
L. N. BAKKEN, K. MARTHINSEN, R. HØIER and R. HOLMESTAD	137	Many-parameter refinements from CBED pattern
A. BARDAL, M. ZWERGER and O. EIBL	139	$YBa_2Cu_3O_{7-\delta}$ thin films on Si substrates with Y_2O_3 and $(Zr_{1-x}Y_x)O_2$ buffer layers. The $YBa_2Cu_3O_{7-\delta}$-Y_2O_3 and Y_2O_3-$(Zr_{1-x}Y_x)O_2$ interfaces
M. D. BENTZON, S. S. ESKILDSEN and P. S. NIELSEN	141	A sensitive way to determine the thickness of thin carbon films by SEM
J.-O. BOVIN	143	Elemental mapping with EDX on a used automobile catalytic converter
J.-O. BOVIN	145	On the determination of the oxidation states of iron with PEELS using a standard TEM
J.-O. BOVIN, A. CARLSSON, J.-O. MALM and G. SCHMID	147	On the structure and temperature stability of ligand covered, 18 nm, gold colloids
J. M. BROCK, M. T. OTTEN and W. M. COENE	149	High-resolution imaging with a coherent electron source: the field emission gun

J. M. Brock, M. T. Otten and M. J. C. de Jong	151	Improved spatial resolution in imaging, diffraction, microanalysis and scanning with a field emission TEM/STEM
A. Carlsson, R. Norrestam and J.-O. Bovin	153	On the cation disorder in pinakiolite, $(Mg,Mn)_3O_2BO_3$
Y. F. Cheng, V. Hansen, J. Gjønnes and L. R. Wallenberg	155	TEM study of the secondary particles in strip-cast Al3003 alloys
C. Clausen and J. B. Bilde-Sørensen	157	Observation of voltage contrast at grain boundaries in YSZ
R. W. Eriksen, E. Sørbrøden, S. Messelt and A. Olsen	159	On-line acquisition of electron diffraction data in TEM
P. J. Fallon and L. M. Brown	161	Analysis of CVD diamond using TEM and parallel EELS in a STEM
L. Gerward	163	X-ray attenuation coefficients: current status and availability
Y. X. Guo, S. J. Andersen, H. K. Nylund and R. Høier	165	A TEM study of a newly discovered metastable phase in an AlMnCrSi alloy
N. N. Hamawi and K. Glejbøl	167	Nucleation of TiN on tungsten needles
P. L. Hansen, D. McComb and R. Brydson	169	ELNES fingerprint of Al coordination in nesosilicates
S. Hansen and O. Johnsen	171	Silver-ion-exchanged Narssârssuk catapleite
S. Hansen, A. Landa-Canovas, U. Håkansson and L. Fälth	173	X-ray microanalysis of Na-P zeolites
V. Hansen and J. Gjønnes	175	Intermediate structures and crystalline approximants in the I→α transformation of Al-(Mn,Fe)-Si alloys
V. Hansen, H. Seim, H. Fjellvåg and A. Olsen	177	Electron microscopy study of some Ni-S phases
J. Hjelen and B.-I. Tolleshaug	179	Electron channeling contrast (ECC) imaging using specimen current
S. Hovmöller	181	Crystallographic image processing
J. S. Jahren	183	Authigenic clay mineral relations in sandstones from offshore Norway. The case of illite and chlorite
O. Johnsen and P. L. Hansen	185	A TEM study of natural perovskite from Gardiner Complex

E. JOHNSON, Q. LI, A. JOHANSEN and L. SARHOLT-KRISTENSEN	187	Crystallization in Al-Fe-Y metallic glasses
G. KARLSSON, A. CARLSSON and J.-O. BOVIN	187	Computerized imaging aid for sectioned RuBisCO crystals
N. C. K. LASSEN	191	Automatic crystal orientation determination from EBSPs
C. K. OLSSON, L. H. CHRISTENSEN and L. GRAHL-MADSEN	193	Characterizing the microstructure of alumina using image processing
M. H. LORETTO	195	State of the art in analytical electron microscopy
D. W. MCCOMB	197	Interpretation of electron energy-loss spectra of minerals
K. E. MOGENSEN and K. GLEJBØL	199	Preparation of TEM specimens from a hardened tool steel
K. E. MOGENSEN and K. GLEJBØL	201	TEM investigation of an ion implanted steel
J. J. L. MULDERS and R. J. ENDERT	203	A database system for SEM images
J. J. L. MULDERS and R. J. ENDERT	205	The influence of parameter settings on speed and accuracy of automatic particle analysis
M. PÓSFAI and M. SUNDBERG	207	HREM investigations of two minerals, $Cu_3(As,Sb)S_4$
L. REIMER	209	Energy filtered electron diffraction
E. O. RISTOLAINEN and K. A. PISCHOW	211	Characterization of the interface and intermediate layers of TiN/Ti/substrate systems
J. M. RODENBURG	213	A new look at the resolution limit
B. SCHMIDT, K. HJEMSTED, E. JOHNSON, K. K. BOURDELLE, A. JOHANSEN, H. H. ANDERSEN and L. SARHOLT-KRISTENSEN	215	Size distributions of In and Pb inclusions in Al
S. A. SETHI and A. R. THÖLÉN	217	Amplitude contrast from small particles
J. SKOGSMO, M. HALVARSSON and S. VUORINEN	219	Phase transformation of CVD κ-Al_2O_3
B. STENBOM, P. LÖÖF and H. NORDÉN	221	Sintering of Pt/Al_2O_3 catalyst in O_2, CO, NO and CO + NO atmospheres
O. SUSEGG, E. HELLUM, A. OLSEN and M. LUTON	223	An electron microscopy study of dispersoids in cryomilled ODS-materials

C. TRÆHOLT — 225 TEM cross-section of high-T_c superconducting thin films

P. VASE — 227 Lithographic methods for production of high-T_c superconducting thin films devices

P. WAHLBERG, C. VESTERGAARD and L. H. CHRISTENSEN — 229 Scanning electron microscopy and modern telecommunication

L. R. WALLENBERG, T. I. SELINDER, Z. HAN and U. HELMERSSON — 231 Identification of semi-coherent Y_2O_3 inclusions in $YBa_2Cu_3O_x$ superconducting thin films by HREM

G. WATERLOO, R. HØIER and K. GJØNNES — 233 A HRTEM study of twins in CdTe and HgTe

235 Diary

238 Announcement

Number 3

DIGITAL OPTICAL MICROSCOPY: CONTRIBUTED REVIEW ARTICLE

P. GUALTIERI — 239 Molecular biology in living cells by means of digital optical microscopy

FIELD EMISSION MICROSCOPY

K.-J. KIM, M. R. DICKSON, V. CHEN and A. G. FANE — 259 Applications of field emission scanning electron microscopy to polymer membrane research

BIOLOGICAL APPLICATIONS

K. M. KYLE and G. HARAUZ — 273 Structures of ribosomal subunits from *Saccharomyces cerevisiae*

J. R. HARRIS, Z. CEJKA, A. WEGENER-STRAKE, W. GEBAUER and J. MARKL — 287 Two-dimensional crystallization, transmission electron microscopy and image processing of keyhole limpet haemocyanin (KLH)

PHYSICAL APPLICATIONS

H. W. SIMMONS, C. E. NOCKOLDS, G. R. ATKINS, S. B. POOLE and M. G. SCEATS — 303 Cathodoluminescence of defects in optical fibres and optical fibre preforms

SCANNING ELECTRON MICROSCOPY

D. Jones, W. J. McHardy, M. J. Wilson and D. Vaughan — 315 Scanning electron microscopy of calcium oxalate on mantle hyphae of hybrid larch roots from a farm forestry experimental site

K. Kanaya, N. Ichise, K. Adachi, K. Yonehara and Y. Muranaka — 319 Observations on charging effects of non-conductive and uncoated materials by ion beam pre-bombardment in scanning electron microscopy

Short communication

S. Dey and B. Dkhar — 337 An unusual type of corneal nipple in the earwig, *Forficula* sp., with a possible anti-reflection role

ABSTRACTS FROM THE MEETING OF THE BIOLOGICAL X-RAY MICROANALYSIS GROUP

J. Abraham, R. D. Butler and D. C. Sigee — 343 X-Ray microanalytical studies on ciliate protozoa in activated sludge

C. Bertoni-Freddari, P. Fattoretti, T. Casoli, M. Gambini, W. Meier-Ruge and J. Ulrich — 345 Neurobiology of the aging hippocampus: intranuclear ionic content of CA1 pyramidal cells

I. D. Bowen, K. Mullarkey and N. Worrill — 347 Backscattered electron imaging, X-ray microanalysis and X-ray microscopy in the study of cell death

A. Campos, J. A. López-Escámez, F. J. Cañizares and P. V. Crespo — 349 Electron probe X-ray microanalysis of Ca and K distributions in the otolithic membrane

J. P. Cassella and S. Yousuf Ali — 351 A microanalytical study of bone mineral in osteogenesis imperfecta

T. J. Collard, T. A. Martin, C. Winters and L. Boddy — 353 Effect of lead on growth of *Hypholoma fasciculare* and *Phanerochaete velutina*

P. Compère, J. A. Morgan, C. Winters and G. Goffinet — 355 X-Ray microanalytical and cytochemical study of the mineralization process in the shore crab cuticle

L. A. Cummings and I. D. Bowen — 357 The localization of acid phosphatase as a prelude to cell death in the blow-fly *Calliphora erythrocephala*

E. El-Bestawy, E. Bellinger, M. Hassan, S. Helmi and D. C. Sigee — 359 X-Ray microanalytical studies on phytoplankton and suspended matter in a polluted freshwater environment: Lake Maryut, Alexandria, Egypt

M. A. HAJIBAGHERI	361	X-Ray microanalysis of ion distribution in *Dunaliella parva*, following cryofixed, molecular distillation dried and embedded specimens
P. V. HATTON and I. M. BROOK	363	X-Ray microanalysis of bone and implanted bone substitutes
E.-R. KREFTING, K. FRENTZEL, J. TEßAREK and H.-J. HÖHLING	365	Quantitative electronprobe X-ray microanalysis on the calcium and phosphorus distribution and calcium transport in epiphyseal growth plate
J. A. LÓPEZ-ESCÁMEZ, P. V. CRESPO, F. J. CAÑIZARES and A. CAMPOS	367	Dependence between saccule and utricle in Ca and K concentrations determined by electron probe X-ray microanalysis
Z. MALIK, T. BABUSHKIN, H. LADAN, H. WEIS, Y. NITZAN, J. SHANANI and D. ZIPORI	369	Cell-death induced by discrete processes: its reflection in cellular ion content revealed by X-ray microanalysis
A. J. MORGAN and C. WINTERS	371	Zinc distribution in hamster skin topically dosed with a zinc–erythromycin complex and zinc acetate: EPXMA in the SEM of cryostat sections
A. J. MORGAN, C. WINTERS and N. WILKINSON	373	Drift corrected quantitative elemental mapping in freeze-dried thin cryosections: metal compartmentation within earthworm chloragocytes
S. M. MORGAN, I. D. BOWEN and A. J. MORGAN	375	EPMXA of bulk elemental changes in the salivary gland of the blowfly (*Calliphora vomitoria*) during metamorphosis
J. A. NOTT, K. P. RYAN and R. PELC	377	X-Ray microanalysis of cadmium in the marine snail *Littorina littorea* (L.)
D. T. PATTON and G. C. CARNEY	379	The application of X-ray microanalysis to the tissues of limpets with high metal content, preliminary results
K. P. RYAN and A. L. PULSFORD	381	Metals in flounder melanomacrophages and sediments
C. SCOTCHFORD and S. YOUSUF ALI	383	Calcium phosphate microcrystal deposition in articular cartilage: characterisation by XRMA
S. K. SINGHRAO, J. W. NEAL, G. COLE and G. R. NEWMAN	385	X-Ray microanalysis: comparison of mineral deposits in Alzheimer's disease and control tissue using TEM
S. A. SMITH, P. WYETH and J. F. V. VINCENT	387	SEM-EDXA characterisation of metal impregnated cuticle

B. J. Thomas and F. R. Minchin — 389 — X-Ray microanalysis of ion distribution across the cortex of soybean nodules

N. Thomas and I. ap Gwynn — 391 — The quantitation of gold-labelled macromolecules on cell surfaces by X-ray microanalysis

J. Wood — 393 — The benefits of real time spectrum processing in quantitative X-ray microanalysis

J. E. Young and C. Winters — 395 — Localised distribution of copper within mature fern gametophytes

397 — Book Reviews

399 — Diary

i — New Patents

Number 4

THREE-DIMENSIONAL IMAGING

401 — Introduction

F. Beltrame, P. Ramoino, M. Fato, M. U. Delmonte Corrado, G. Marcenaro and T. Crippa Franceschi — 403 — Three-dimensional reconstruction of *Paramecium primaurelia* oral apparatus through confocal laser scanning optical microscopy

K. Carlsson, K. Mossberg, P. J. Helm and J. Philip — 413 — Use of UV excitation in confocal laser scanning fluorescence microscopy

T. Wilson and F. Reinholz — 429 — Confocal microscopy via reciprocal optical fibre image detection

S. R. Goldstein, T. Hubin and T. G. Smith Jr. — 437 — An improved no-moving-parts video-rate confocal microscope

B. Roysam, A. K. Bhattacharjya, C. Srinivas, D. H. Szarowski and J. N. Turner — 447 — Unsupervised noise removal algorithms for three-dimensional confocal fluorescence microscopy

N. Åslund and A. Liljeborg — 463 — A method to extract homogeneous regions in 3-D confocal microscopy enabling compensation for depth dependent light attenuation

S. S. S. Poon, R. K. Ward and B. Palcic 481 Feature extraction from three-dimensional images in quantitative microscopy

D. F. Abbott and K. A. Nugent 491 Limitations on cell volume determination using three-dimensional optical microscopy

C. Preza, J. M. Ollinger, J. G. McNally and L. J. Thomas Jr. 501 Point-spread sensitivity analysis for computational optical-sectioning microscopy

L. Capineri, G. Castellini, L. Masotti and S. Rocchi 515 Computer simulated benchmarks of synthetic aperture techniques for vascular ultrasonography

525 Diary

i Index